

5. The synthesis of two-chromosome double interchanges.

Two-chromosome double interchange stocks were synthesized in maize by intercrossing single interchange stocks, each with breakpoints that involved the same two chromosomes. Combinations that combined both of the single interchanges into the two pairs of chromosomes were established presumably by simultaneous crossovers that occurred in the two differential segments.

A series of interchanges involving chromosomes 9 + (1 through 10) were employed along with 1-5's and 2-6's. Nine different opposite-arms double interchange stocks were obtained in maize involving the following chromosomes: 1-9, 2-9, 4-9, 5-9, 6-9, and 9-10 from 9 + (1 through 10) series, one 2-6, and two different 1-5's. The series involving 9 covers all chromosomes except 3, 7, and 8. Five different I-IV same-arms double interchange stocks were also synthesized in Neurospora crassa.

Several of the synthesized two-chromosome double interchange stocks in both maize and Neurospora were tested for their effectiveness as linkage detectors by crossing them with multiple marker stocks. It appears that such stocks can be more effective than other interchange techniques in locating unplaced genes.

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1. A rapid screening technique for photosynthetic mutants.*

Photosynthetic mutants have provided a valuable approach to the resolution of questions concerning photosynthetic mechanisms (Levine, R. P., 1969, Ann. Rev. Pl. Physiol. 20:523-540). As the use of mutants necessitates their rapid identification, an in vivo screening technique was developed to locate photosynthetic mutants that have normal pigment

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